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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,431	02/26/2004	Shi-Wai S. Cheng	GP-300576	4757
7590	02/23/2009		EXAMINER	
CARY W. BROOKS General Motors Corporation Legal Staff, Mail Code 482-C23-B21 P.O. Box 300 Detroit, MI 48265-3000			WARTALOWICZ, PAUL A	
			ART UNIT	PAPER NUMBER
			1793	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/787,431	CHENG, SHI-WAI S.	
	Examiner	Art Unit	
	PAUL A. WARTALOWICZ	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 04 January 2008.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 22-24, 26-32 and 34-46 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 22-24, 26-32 and 34-46 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application

6) Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 1/4/08 have been fully considered but they are not persuasive.

Applicant argues that Ernest and Rummler fail to teach the limitation "wherein the catalyst foam filter includes a side edge and a rear face and wherein the wall flow filter surrounds at least a portion of the edge".

However, Ernest and Rummler are not relied upon for this limitation. Wang is relied upon for the teaching of this limitation.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that although Galloway discloses a type of separator, Galloway is not directed toward a catalyzed foam filter.

However, Galloway teaches a filter system using a separator. The motivation for the separator in Galloway is to provide maximum surface area for the catalyst. One of ordinary skill in the art would recognize that the separator system of Galloway could be readily used in a foam filter of the claimed invention instead of the porous metal catalyst of Galloway and that providing maximum surface contact is applicable to the foam filter of the present invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 22, 23, 26, 27, 29-31, 34-36, 45, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernest et al. (U.S. 4426320) in view of Wang (5707593).

Ernest teach an exhaust gas treatment system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 2, 3) and then through a fine filter (instant wall flow filter, col. 1, 2).

It appears the teaching in Ernest meet the limitation of the fine wall filter surrounding a portion of the catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Ernest teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Ernest meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Ernest fail to teach that an additional filter surrounds a portion of the side edge.

Wang teaches an apparatus for filtering diesel engine exhaust (col. 1) wherein a porous ceramic foam filter is surrounded by another filter for the purpose of providing sites for filtering and deposition of soot particles (col. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a porous ceramic foam filter is surrounded by another filter on a portion of a side edge in Ernest in order to provide sites for filtering and deposition of soot particles as taught by Wang.

Regarding claim 27, Ernest fails to teach wherein the wall flow filter is a single cell wall flow filter.

Ernest teach that the cell sizes of each filter are selected to optimize particulate trapping so that pressure drop is minimized while good trapping efficiency is maintained.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the cell size of the filter, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would

have been motivated to optimize the cell size of the filter by the reasoned explanation that the thickness of the wall filter can be reduced to an optimum size so as to minimize the pressure drop while maintaining good trapping efficiency as taught by Ernest.

Claims 22, 23, 26, 29-31, 34-36, 45, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rummler et al. (U.S. 5853579) in view of Wang (5707593).

Rummler teach a filter system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 31, fig. 24A) and then through a fine filter (instant wall flow filter, col. 31, fig. 24A).

It appears the teaching in Rummler meet the limitation of the fine wall filter surrounding a portion of a catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Rummler teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Rummler meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Rummler fail to teach an additional filter surrounds a portion of the side edge.

Wang teaches an apparatus for filtering diesel engine exhaust (col. 1) wherein a porous ceramic foam filter is surrounded by another filter for the purpose of providing sites for filtering and deposition of soot particles (col. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a porous ceramic foam filter is surrounded by another filter on a portion of a side edge in Rummler in order to provide sites for filtering and deposition of soot particles as taught by Wang.

Claims 24, 28, 32, 37-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Ernest et al. (U.S. 4426320) in view of Wang (5707593) and Galloway (U.S. 5582800).

Ernest teach an exhaust gas treatment system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 2, 3) and then through a fine filter (instant wall flow filter, col. 1, 2).

It appears the teaching in Ernest meet the limitation of the fine wall filter surrounding a portion of the catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Ernest teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Ernest meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Ernest fail to teach a separator having an opening therethrough wherein the combination is supported by the separator so that the opening exposes the front face of the catalyzed filter and that the wall flow filter surrounds a portion of the side edge.

Ernest fail to teach that an additional filter surrounds a portion of the side edge.

Wang teaches an apparatus for filtering diesel engine exhaust (col. 1) wherein a porous ceramic foam filter is surrounded by another filter for the purpose of providing sites for filtering and deposition of soot particles (col. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a porous ceramic foam filter is surrounded by another filter on a portion of a side edge in Ernest in order to provide sites for filtering and deposition of soot particles as taught by Wang.

Galloway teaches a filter apparatus (col. 1) wherein a fine filter surrounds both sides of coarse filter and the rear of the coarse filter (fig. 1, # 14; fig. 2, # 14,16,18,19). Galloway also teaches a separator that has an opening and wherein the combination is supported by the separator (fig. 1, #13; fig. 2, # 16; fig 3, # 43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a fine filter surrounding both sides of coarse filter and the rear of the coarse filter and a separator that has an opening and wherein the combination is supported by the separator in Ernest because such a

structure is known in the art and that such a filter apparatus allows for maximum surface contact with the exhaust gas as taught by Galloway.

Regarding claims 43 and 44, Ernest fail to teach a plurality of filters. However, it would have been obvious to provide a duplication of filters for a multiple effect in the absence of unexpected results. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)

Claims 24, 28, 32, 37-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Rummler et al. (U.S. 5853579) in view of Wang (5707593) and Galloway (U.S. 5582800).

Rummler teach a filter system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 31, fig. 24A) and then through a fine filter (instant wall flow filter, col. 31, fig. 24A).

It appears the teaching in Rummler meet the limitation of the fine wall filter surrounding a portion of a catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Rummler teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Rummller meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Rummller fail to teach an additional filter surrounds a portion of the side edge.

Wang teaches an apparatus for filtering diesel engine exhaust (col. 1) wherein a porous ceramic foam filter is surrounded by another filter for the purpose of providing sites for filtering and deposition of soot particles (col. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a porous ceramic foam filter is surrounded by another filter on a portion of a side edge in Rummller in order to provide sites for filtering and deposition of soot particles as taught by Wang.

Rummller fail to teach a separator having an opening therethrough wherein the combination is supported by the separator so that the opening exposes the front face of the catalyzed filter, and that the wall flow filter surrounds a portion of the side edge.

Galloway teaches a filter apparatus (col. 1) wherein a fine filter surrounds both sides of coarse filter and the rear of the coarse filter (fig. 1, # 14; fig. 2, # 14,16,18,19). Galloway also teaches a separator that has an opening and wherein the combination is supported by the separator (fig. 1, #13; fig. 2, # 16; fig 3, # 43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a fine filter surrounding both sides of coarse filter and the rear of the coarse filter and a separator that has an opening and wherein the combination is supported by the separator in Rummller because such a

structure is known in the art and that such a filter apparatus allows for maximum surface contact with the exhaust gas as taught by Galloway.

Regarding claims 43 and 44, Rummller fail to teach a plurality of filters. However, it would have been obvious to provide a duplication of filters for a multiple effect in the absence of unexpected results. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)

Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rummller et al. (U.S. 5853579) in view of Wang (5707593) and Galloway (U.S. 5582800) and either one of Miller et al. (3319793) or Nagaoka (6488842).

Rummller teach a filter system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 31, fig. 24A) and then through a fine filter (instant wall flow filter, col. 31, fig. 24A).

It appears the teaching in Rummller meet the limitation of the fine wall filter surrounding a portion of a catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Rummller teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Rummller meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Rummller fail to teach an additional filter surrounds a portion of the side edge.

Wang teaches an apparatus for filtering diesel engine exhaust (col. 1) wherein a porous ceramic foam filter is surrounded by another filter for the purpose of providing sites for filtering and deposition of soot particles (col. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a porous ceramic foam filter is surrounded by another filter on a portion of a side edge in Rummller in order to provide sites for filtering and deposition of soot particles as taught by Wang.

Rummller fail to teach a separator having an opening therethrough wherein the combination is supported by the separator so that the opening exposes the front face of the catalyzed filter, and that the wall flow filter surrounds a portion of the side edge.

Galloway teaches a filter apparatus (col. 1) wherein a fine filter surrounds both sides of coarse filter and the rear of the coarse filter (fig. 1, # 14; fig. 2, # 14,16,18,19). Galloway also teaches a separator that has an opening and wherein the combination is supported by the separator (fig. 1, #13; fig. 2, # 16; fig 3, # 43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a fine filter surrounding both sides of coarse filter and the rear of the coarse filter and a separator that has an opening and wherein the combination is supported by the separator in Ernest or Rummller because

such a structure is known in the art and that such a filter apparatus allows for maximum surface contact with the exhaust gas as taught by Galloway.

Rummler fail to teach a plurality of filters.

Miller teach a filter system (col. 1) wherein it is known to provide multiple filters in a housing in the filtering art (col. 1-2).

Nagaoka teach a filter system (col. 1) wherein multiple filters are disposed in a housing (fig. 1, # 2, 7).

Galloway additionally teaches that multiple filters are disposed in an assembly for the purpose of removing toxins from exhaust gas (fig. 1, #14; col. 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide multiple filters disposed in a housing in Rummler because it is well known in the art to provide multiple filters for multiple effect and efficiency as taught by Miller, Nagaoka, and Galloway.

Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernest et al. (U.S. 4426320) in view of Wang (5707593) and Galloway (U.S. 5582800) and either one of Miller et al. (3319793) or Nagaoka (6488842).

Ernest teach an exhaust gas treatment system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 2, 3) and then through a fine filter (instant wall flow filter, col. 1, 2).

It appears the teaching in Ernest meet the limitation of the fine wall filter surrounding a portion of the catalyzed foam filter in that the coarse foam filter is

upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Ernest teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Ernest meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Ernest fail to teach that an additional filter surrounds a portion of the side edge.

Wang teaches an apparatus for filtering diesel engine exhaust (col. 1) wherein a porous ceramic foam filter is surrounded by another filter for the purpose of providing sites for filtering and deposition of soot particles (col. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a porous ceramic foam filter is surrounded by another filter on a portion of a side edge in Ernest in order to provide sites for filtering and deposition of soot particles as taught by Wang.

Ernest fail to teach a separator having an opening therethrough wherein the combination is supported by the separator so that the opening exposes the front face of the catalyzed filter, and that the wall flow filter surrounds a portion of the side edge.

Galloway teaches a filter apparatus (col. 1) wherein a fine filter surrounds both sides of coarse filter and the rear of the coarse filter (fig. 1, # 14; fig. 2, # 14,16,18,19).

Galloway also teaches a separator that has an opening and wherein the combination is supported by the separator (fig. 1, #13; fig. 2, # 16; fig 3, # 43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a fine filter surrounding both sides of coarse filter and the rear of the coarse filter and a separator that has an opening and wherein the combination is supported by the separator in Ernest because such a structure is known in the art and that such a filter apparatus allows for maximum surface contact with the exhaust gas as taught by Galloway.

Ernest fail to teach a plurality of filters.

Miller teach a filter system (col. 1) wherein it is known to provide multiple filters in a housing in the filtering art (col. 1-2).

Nagaoka teach a filter system (col. 1) wherein multiple filters are disposed in a housing (fig. 1, # 2, 7).

Galloway additionally teaches that multiple filters are disposed in an assembly for the purpose of removing toxins from exhaust gas (fig. 1, #14; col. 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide multiple filters disposed in a housing in Ernest because it is well known in the art to provide multiple filters for multiple effect and efficiency as taught by Miller, Nagaoka and Galloway.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL A. WARTALOWICZ whose telephone number is (571)272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Wartalowicz
February 4, 2009

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